

WHAT IS CLAIMED IS:

1. An image forming apparatus comprising:

a heating means for heating an image on a transfer
5 material;

a power supply means for supplying electricity to
the heating means;

an information detection means for detecting
information on a thickness or surfaceness of the
10 transfer material to be transported; and

an adjust means for adjusting an electricity
supplied to the power supply means according to the
information detected by the information detection
means.

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2. An image forming apparatus according to claim 1,
wherein the adjust means comprises:

a first power control means for controlling the
power supply means by a power ratio, a ratio of a
20 desired power to a power obtained by fully turning on
a half wave or full wave of an ac supply voltage, and
for supplying power to the heating means for a
predetermined duration at a predetermined first power
ratio;

25 a current detection means for detecting a current
being supplied to the heating means;

a calculation means for calculating a maximum

applicable power ratio to be supplied to the heating means, based on a difference between a current value detected by the current detection means and a maximum applicable current value that can be supplied to the heating means by the power control means; and

a second power control means for controlling the power to be supplied from the power supply means to the heating means at less than the maximum applicable power ratio calculated by the calculation means.

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3. An image forming apparatus according to claim 2, wherein the current detection means comprises:

a current-voltage conversion means for converting an input current to the heating means into a voltage;

15 a half-wave rectifying means for half-wave rectifying the voltage produced by the current-voltage conversion means;

an integral means for integrating an half-wave rectified output produced by the half-wave rectifying means;

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a differential amplifying means for amplifying a difference between an integrated result produced by the integral means and the half-wave rectified output;

a maximum value holding means for holding a maximum output from the differential amplifying means as a maximum value of the input current;

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a first pulse signal output means for outputting a

pulse signal when an input supply voltage to the heating means falls below a predetermined threshold; and

a discharge means for discharging a capacitor

- 5 forming the integral means and a capacitor forming the maximum value holding means in response to the pulse signal from the first pulse signal output means.

4. An image forming apparatus according to claim 1,
10 wherein the heating means is a fixedly positioned heater;

wherein the image forming apparatus comprises:

an image forming means for forming an unfixed toner image on a transfer material; and

- 15 a fusing means for permanently fixing the unfixed toner image on the transfer material, the fusing means having the fixedly positioned heater, a film adapted to move in contact with the heater, a pressure member cooperating with the heater, with the film interposed
20 therebetween, to form a nip portion, and the adjust means, wherein the transfer material carrying the image is passed between the film and the pressure member in the nip portion to heat the image on the transfer material with heat radiated from the heater
25 through the film;

wherein the adjust means comprises:

a temperature detection means for detecting a

temperature of the heater;

a current detection means for detecting a current flowing in the heater; and

a control means for controlling an electricity to
5 the heater so that a current flowing in the heater is equal to a preset target current value and for correcting the preset target current value when the temperature detected by the temperature detection means as the transfer material passes through the nip
10 portion deviates from a preset temperature range.

5. An image forming apparatus according to claim 4, wherein the film is a heating roller formed of an endless film, the pressure member is a pressing roller
15 and the heater is in contact with an inner circumferential surface of the heating roller formed of the endless film.

6. An image forming apparatus according to claim 4,
20 wherein the temperature detection means is arranged on a side of the heater opposite the side of the heater that is in contact with the film.

7. An image forming apparatus according to claim 4,
25 wherein the image carried on the transfer material is an unfixed toner image and the unfixed toner image is permanently fixed through heating.

8. An image forming apparatus according to claim 4, wherein the current detection means comprises:

5 a current-voltage conversion means for converting an input current to the heating means into a voltage;

a half-wave rectifying means for half-wave rectifying the voltage produced by the current-voltage conversion means;

10 an integral means for integrating an half-wave rectified output produced by the half-wave rectifying means;

a differential amplifying means for amplifying a difference between an integrated result produced by the integral means and the half-wave rectified output;

15 a maximum value holding means for holding a maximum output from the differential amplifying means as a maximum value of the input current;

a first pulse signal output means for outputting a pulse signal when an input supply voltage to the heating means falls below a predetermined threshold; and

20 a discharge means for discharging a capacitor forming the integral means and a capacitor forming the maximum value holding means in response to the pulse signal from the first pulse signal output means.

9. An image forming apparatus according to claim 1,

wherein the heating means is a fixedly positioned heater;

wherein the image forming apparatus comprises:

an image forming means for forming an unfixed toner
5 image on a transfer material; and

a fusing means for permanently fixing the unfixed
toner image on the transfer material, the fusing means
having the fixedly positioned heater, a film adapted
to move in contact with the heater, a pressure member
10 cooperating with the heater, with the film interposed
therebetween, to form a nip portion, and the adjust
means, wherein the transfer material carrying the
image is passed between the film and the pressure
member in the nip portion to heat the image on the
15 transfer material with heat radiated from the heater
through the film;

wherein the adjust means comprises:

a temperature detection means for detecting a
temperature of the heater;

20 a current detection means for detecting a current
flowing in the heater; and

a control means for controlling an electricity to
the heater so that a temperature of the heater is
equal to a preset target temperature and for
25 correcting the preset target temperature when the
current detected by the current detection means as the
transfer material passes through the nip portion

deviates from a preset range.

10. An image forming apparatus according to claim
9, wherein the film is a heating roller formed of an
5 endless film, the pressure member is a pressing roller
and the heater is in contact with an inner
circumferential surface of the heating roller formed
of the endless film.

10 11. An image forming apparatus according to claim
9, wherein the temperature detection means is arranged
on a side of the heater opposite the side of the
heater that is in contact with the film.

15 12. An image forming apparatus according to claim
9, wherein the image carried on the transfer material
is an unfixed toner image and the unfixed toner image
is permanently fixed through heating.

20 13. An image forming apparatus according to claim
9, wherein the current detection means comprises:

a current-voltage conversion means for converting
an input current to the heating means into a voltage;

a half-wave rectifying means for half-wave
25 rectifying the voltage produced by the current-voltage
conversion means;

an integral means for integrating an half-wave

rectified output produced by the half-wave rectifying means;

a differential amplifying means for amplifying a difference between an integrated result produced by the integral means and the half-wave rectified output;

a maximum value holding means for holding a maximum output from the differential amplifying means as a maximum value of the input current;

a first pulse signal output means for outputting a pulse signal when an input supply voltage to the heating means falls below a predetermined threshold; and

a discharge means for discharging a capacitor forming the integral means and a capacitor forming the maximum value holding means in response to the pulse signal from the first pulse signal output means.

14. An electrophotographic image forming apparatus having a heating means and a power supply means for supplying electricity to the heating means, the electrophotographic image forming apparatus comprising:

a first power control means for controlling the power supply means by a power ratio, a ratio of a desired power to a power obtained by fully turning on a half wave or full wave of an ac supply voltage, and for supplying power to the heating means for a

predetermined duration at a predetermined first power ratio;

a current detection means for detecting a current being supplied to the heating means by the first power control means;

a calculation means for calculating a maximum applicable power ratio to be supplied to the heating means, based on a difference between a current value detected by the current detection means and a maximum applicable current value that can be supplied to the heating means by the power control means; and

a second power control means for controlling the power to be supplied from the power supply means to the heating means at less than the maximum applicable power ratio calculated by the calculation means.

15. An image fusing device having a fixedly positioned heater, a film adapted to move in contact with the heater, and a pressure member cooperating with the heater, with the film interposed therebetween, to form a nip portion, wherein a transfer material carrying an image is passed between the film and the pressure member in the nip portion to heat the image on the transfer material with heat radiated from the heater through the film, the image fusing device comprising:

a temperature detection means for detecting a

temperature of the heater;

a current detection means for detecting a current flowing in the heater; and

a control means for controlling an electricity to
5 the heater so that a current flowing in the heater is equal to a preset target current value and for correcting the preset target current value when the temperature detected by the temperature detection means as the transfer material passes through the nip
10 portion deviates from a preset temperature range.

16. An image fusing device according to claim 15, wherein the film is a heating roller formed of an endless film, the pressure member is a pressing roller
15 and the heater is in contact with an inner circumferential surface of the heating roller formed of the endless film.

17. An image fusing device according to claim 15,
20 wherein the temperature detection means is arranged on a side of the heater opposite the side of the heater that is in contact with the film.

18. An image fusing device according to claim 15,
25 wherein the image carried on the transfer material is an unfixed toner image and the unfixed toner image is permanently fixed through heating.

19. An image forming apparatus comprising:
an image forming means for forming an unfixed toner
image on a transfer material; and
5 a fusing means for permanently fixing the unfixed
toner image carried on the transfer material;
wherein the fusing means is the fusing device of
claim 15.

10 20. An image fusing device having a fixedly
positioned heater, a film adapted to move in contact
with the heater, and a pressure member cooperating
with the heater, with the film interposed therebetween,
to form a nip portion, wherein a transfer material
15 carrying an image is passed between the film and the
pressure member in the nip portion to heat the image
on the transfer material with heat radiated from the
heater through the film, the image fusing device
comprising:

20 a temperature detection means for detecting a
temperature of the heater;
a current detection means for detecting a current
flowing in the heater; and
a control means for controlling an electricity to
25 the heater so that a temperature of the heater is
equal to a preset target temperature and for
correcting the preset target temperature when the

current detected by the current detection means as the transfer material passes through the nip portion deviates from a preset range.

5 21. An image fusing device according to claim 20, wherein the film is a heating roller formed of an endless film, the pressure member is a pressing roller and the heater is in contact with an inner circumferential surface of the heating roller formed
10 of the endless film.

22. An image fusing device according to claim 20, wherein the temperature detection means is arranged on a side of the heater opposite the side of the heater
15 that is in contact with the film.

23. An image fusing device according to claim 20, wherein the image carried on the transfer material is an unfixed toner image and the unfixed toner image is
20 permanently fixed through heating.

24. An image forming apparatus comprising:
an image forming means for forming an unfixed toner image on a transfer material; and
25 a fusing means for permanently fixing the unfixed toner image carried on the transfer material;
wherein the fusing means is the fusing device of

claim 20.

25. An image forming apparatus having a fusing device, comprising:

5 a current-voltage conversion means for converting an input current to the fusing device into a voltage;

a half-wave rectifying means for half-wave rectifying the voltage produced by the current-voltage conversion means;

10 an integral means for integrating an half-wave rectified output produced by the half-wave rectifying means;

a differential amplifying means for amplifying a difference between an integrated result produced by the integral means and the half-wave rectified output;

15 a maximum value holding means for holding a maximum output from the differential amplifying means as a maximum value of the input current;

a first pulse signal output means for outputting a pulse signal when an input supply voltage to the fusing device falls below a predetermined threshold; and

20 a discharge means for discharging a capacitor forming the integral means and a capacitor forming the maximum value holding means in response to the pulse signal from the first pulse signal output means.